Claim Amendments

Amend the claims to read as follows:

1. (canceled)

2. (currently amended) The device of claim 17 in which the membrane support is a single monolith.

3. (currently amended) The device of claim 17 in which the membrane support is a plurality of monolith segments.

4. (currently amended) The device of claim 17 in which the permselective membrane is a membrane with a pore size in the range of 10 nanometers to 1 micron and is suitable for an ultrafiltration or microfiltration process.

5. (currently amended) The device of claim 17 in which the ~~means of permeate introduction and withdrawal are~~housing assembly further comprises channels which communicate with an annular space between the membrane device and ~~a permeate collection~~the housing.

6. (original) The device of claim 5 in which the annular space is filled with a flow resistance material to reduce permeate flow through the annular space from the feed end of the device to the retentate end of the device.

7. (original) The device of claim 6 in which the flow resistance material is a constrained bed of granular material selected from the group of ceramic, glass, metallic or polymeric granular materials.

8. (original) The device of claim 6 in which the flow resistance material is a metal or plastic mesh.

9. (currently amended) The device of claim 17 in which ~~the means of permeate introduction and withdrawal are~~at least one permeate port communicates with a ducts at ~~the feed~~an end face

of the membrane element ~~and the retentate end face, respectively~~.

10. (currently amended) The devices of claim 17 in which the cross-sectional area of the permeate chambers is reduced from the cross-sectional area of the chambers that would otherwise exist for a monolith support with a uniform and unmodified passageway structure.

11. (original) The devices of claim 10 in which the chamber cross-sectional area is reduced during the monolith support fabrication process.

12. (original) The devices of claim 10 in which the chamber cross-sectional area is reduced by plugging chambers of the monolith support during the device fabrication process.

13. (original) The devices of claim 10 in which the chamber cross-sectional area is reduced by filling chambers of the monolith support with a constrained bed of granular material during the device fabrication process.

14-16. (canceled)

17. (new) A crossflow membrane device for receiving a feedstock and for separating the feedstock into permeate and retentate, comprising:

a) a membrane element that receives the feedstock at a feed end face, and separates the feedstock into permeate and retentate, the membrane element comprising:

i) a membrane support containing at least one monolith of porous material defining a plurality of passageways with passageway wall surfaces, the passageways extending longitudinally from the feed end face of the monolith to a retentate end face of the monolith;

ii) a permselective membrane coating applied to the passageway wall surfaces of at least the channels through which the feedstock flows; and

iii) at least one permeate conduit formed within the monolith, the conduit containing a plurality of longitudinal permeate chambers extending substantially the

entire length of the monolith, transected proximate the feed end face by at least one permeate channel and proximate the retentate end face by at least one other permeate channel;

b) a housing assembly that contains the membrane element, the assembly comprising:

i) a housing that contains the element;

ii) a feedstock inlet port in communication with the feed end face of the monolith, and a retentate outlet port in communication with the retentate end face of the monolith;

iii) a permeate circulation inlet port in fluid communication with the permeate channel or channels proximate the feed end face, to allow for the introduction of circulated permeate into the permeate chambers and flow of the circulated permeate along the length of the permeate chambers;

iv) a permeate outlet port in fluid communication with the permeate channel or channels proximate the retentate end face, to allow for the withdrawal of the permeate from the permeate chambers; and

v) a means of separating the permeate flow from the feed and retentate flows.

18. (new) A method of separating a feedstock into permeate and retentate with a crossflow membrane device that receives feedstock at a feed end face, comprising:

a) providing a membrane element that receives the feedstock at a feed end face, and separates the feedstock into permeate and retentate, the membrane element comprising:

i) a membrane support containing at least one monolith of porous material defining a plurality of passageways with passageway wall surfaces, the passageways extending longitudinally from the feed end face of the monolith to a retentate end face of the monolith;

ii) a permselective membrane coating applied to the passageway wall surfaces of at least the channels through which the feedstock flows; and

iii) at least one permeate conduit formed within the monolith, the conduit containing a plurality of longitudinal permeate chambers extending substantially the entire length of the monolith, transected proximate the feed end face by at least one permeate channel and proximate the retentate end face by at least one other permeate channel;

b) providing a housing assembly that contains the membrane element, the assembly comprising:

i) a housing that contains the element;

ii) a feedstock inlet port in communication with the feed end face of the monolith, and a retentate outlet port in communication with the retentate end face of the monolith;

iii) a permeate circulation inlet port in fluid communication with the permeate channel or channels proximate the feed end face, to allow for the introduction of circulated permeate into the permeate chambers and flow of the circulated permeate along the length of the permeate chambers;

iv) a permeate outlet port in fluid communication with the permeate channel or channels proximate the retentate end face, to allow for the withdrawal of the permeate from the permeate chambers; and

v) a means of separating the permeate flows from the feed and retentate flows;

c) introducing a feedstock and withdrawing retentate; and

d) circulating a portion of the permeate through the permeate conduit co-currently with the feedstock flow, to create a decreasing permeate pressure within the permeate conduit from the feed end of the membrane device to the retentate end of the device.